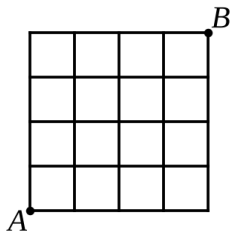
Math Contest: Mixed Problems

Solve each problem. Show your work and circle your final answer.

① Moving only up or to the right along the grid lines, how many different paths go from A to B?



② The sum of four consecutive even integers is 236. What is the least of the four integers?

③ How many positive factors does 144 have?

④ Two trains leave stations A and B at the same time, heading toward each other. The stations are 300 miles apart. After how many hours will the trains meet?



⑤ Today is Wednesday. What day of the week will it be 100 days from today?

⑥ Ms. Lee has 48 pencils and 72 erasers. She wants to make identical supply kits that use all of the pencils and erasers with none left over. What is the greatest number of kits she can make?

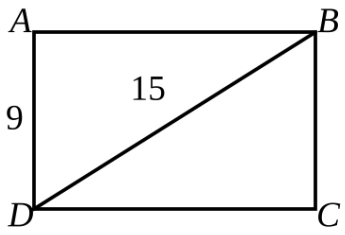
⑦ The pattern of squares below is made of toothpicks. If the pattern continues, how many toothpicks are needed to build Figure 25?



Figure 1 Figure 2 Figure 3

⑧ Ana is three times as old as her brother. In 8 years, she will be twice as old as her brother will be then. How old is Ana now?

(9) Rectangle ABCD has width 9 and diagonal 15, as shown. What is the area of the rectangle?



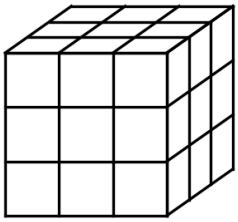
(10) In an election with three candidates, Candidate A received 45% of the votes, Candidate B received 35%, and Candidate C received the remaining 340 votes. How many votes did Candidate A receive?

(11) Jen runs the first 3 miles of a 6-mile loop at 6 mph and the last 3 miles at 4 mph. What is her average speed for the whole loop, in miles per hour? Express your answer as a decimal.

(12) The greatest common factor of two numbers is 6 and their least common multiple is 180. If one of the numbers is 36, what is the other number?

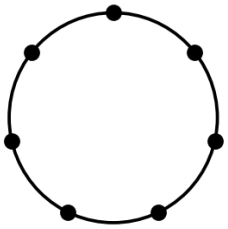
(13) At a school store, 2 pens cost the same as 6 pencils, and 3 pencils cost the same as 4 erasers. How many erasers cost the same as 10 pens?

(14) A $3 \times 3 \times 3$ cube is painted on all six faces and then cut into 27 unit cubes. How many of the unit cubes have paint on exactly two faces?



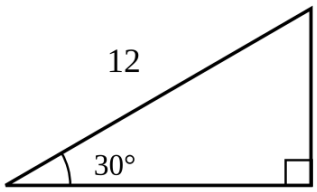
(15) The sum of two numbers is 48 and their difference is 14. What is the product of the two numbers?

(16) Seven points are equally spaced on a circle. How many different triangles have all three vertices among these points?



(17) A line passes through the points (1, 2) and (4, 11). What is the y-intercept of the line?

(18) What is the area of the right triangle shown? Express your answer in simplest radical form.



(19) What is the least positive integer that has exactly 10 positive factors?

(20) The cylinder shown has a diameter of 6 cm and a height of 8 cm. What is its volume, in cubic centimeters? Express your answer in terms of π.

